WHAT IS CLAIMED IS:

1. A transfer apparatus for transferring conductive bumps to an array of conductive pads on a substrate, comprising:

a sucking head having plural vacuum holes laid on a pattern same as a pattern of said array of conductive pads;

a vacuum source developing vacuum in said plural vacuum holes, and breaking said vacuum;

an array station having a pallet formed with plural recesses laid on said pattern of said array of conductive pads, and receiving said conductive bumps, respectively; and

a driving mechanism moving said sucking head to said pallet so as to form paths physically separated from one another for guiding said conductive bumps from said plural recesses to said plural vacuum holes, and further moving said sucking head from said pallet to said array of conductive pads.

2. The transfer apparatus as set forth in claim 1, in which said array station is further formed with an air passage connected to said recesses for supplying the air thereto when said vacuum source develops vacuum in said paths through said plural vacuum holes.

3. The transfer apparatus as set forth in claim 2, in which said air passage has a hollow space open to the air, and plural air holes respectively associated with said plural recesses and connected between said hollow space and the associated recesses.

4. The transfer apparatus as set forth in claim 3, in which said plural air holes are offset from said associated recesses, respectively.

5. The transfer apparatus as set forth in claim 4, in which said array station includes a first plate formed with said plural air holes and a second plate formed with said plural recesses and connected to said first plate.

6. The transfer apparatus as set forth in claim 5, in which said first plate is merged with said second plate by a diffusion bonding.

7. The transfer apparatus as set forth in claim 1, in which said conductive bumps have a spherical configuration, and said plural recesses have a depth fallen within a range from 50 % to 110 % of a diameter of said conductive bumps.

8. The transfer apparatus as set forth in claim 7, in which said plural recesses are connected through plural air holes to the air, and said plural air holes are offset from the associated recesses.

9. The transfer apparatus as set forth in claim 7, in which said depth is smaller in value than said diameter of said conductive bumps, and said plural vacuum holes have respective sucking ports larger in area than cross sections of said conductive bumps coplanar with an upper surface of said pallet.

10. The transfer apparatus as set forth in claim 9,in which said sucking head has a first plate formed with said sucking ports and a second plate formed with remaining portions of said plural vacuum holes and fixed to said first plate.

11. The transfer apparatus as set forth in claim 10, in which said first plate is merged with said second plate by a diffusion bonding.

12. The transfer apparatus as set forth in claim 10, in which said sucking ports are defined by inner surfaces inclined with respect to a surface of said first plate where said sucking ports are open so that said sucking ports are reduced in area from said surface toward said remaining portions.

13. The transfer apparatus as set forth in claim 12, in which said sucking ports are formed in a silicon layer.

14. The transfer apparatus as set forth in claim 13, in which said inner surfaces are (111) lattice planes of the silicon crystal.

15. The transfer apparatus as set forth in claim 12, in which said inner surfaces are rounded.

16. The transfer apparatus as set forth in claim 15, in which said inner surfaces are formed in a metallic layer formed on said first plate by an electroforming.

17. The transfer apparatus as set forth in claim 15, in which said inner surfaces are formed in an organic compound layer.

18. The transfer apparatus as set forth in claim 17, in which said organic compound layer is formed of at least one substance selected from the group consisting of polyimide, polyamide and polyurea resin.

19. The transfer apparatus as set forth in claim 1, in which said array station further includes a vibrator driven for vibrations so as to vibrate said conductive bumps received in said pallet.

20. The transfer apparatus as set forth in claim 19, in which said vibrator is a piezoelectric element.

21. The transfer apparatus as set forth in claim 1, further comprising a monitoring system monitoring said pallet to see whether or not said conductive bumps are respectively received in the recesses of an array corresponding to said array of conductive pads, and instructing said array station to move said pallet for assigning another array of recesses respectively filled with said conductive bumps to said sucking head with the negative answer and said driving mechanism to capture said conductive bumps by said sucking head with the positive answer.

22. The transfer apparatus as set forth in claim 21, in which said monitoring system includes an image pick-up device directed to said pallet, and said monitoring system gives instructions selectively to said array station and said driving mechanism through a data processing on the image supplied from said image pick-up device.

23. The transfer apparatus as set forth in claim 1, in which said conductive bumps are received in said plural recesses in the presence of liquid.

24. The transfer apparatus as set forth in claim 23, in which said array station is further formed with a drain passage connected to said recesses for flowing out said liquid after said conductive bumps are received in said plural recesses, respectively.

25. The transfer apparatus as set forth in claim 24, in which said drain passage has a hollow space and plural drain holes respectively associated with

said plural recesses and connected between said hollow space and the associated recesses.

26. The transfer apparatus as set forth in claim 25, in which said plural drain holes are offset from said associated recesses, respectively.

27. A ball transfer system comprising

a ball arraying apparatus for arraying conductive balls in an array of recesses formed in a pallet in the presence of electrolyte, said array of recesses being laid on a pattern identical with a pattern of conductive pads formed on a substrate, and

a ball transfer apparatus for transferring said conductive balls from said recesses to said array of pads on said substrate.

28. The ball transfer system as set forth in claim 27, in which said ball arraying apparatus includes

a bath filled with said electrolyte,

a pallet conveying unit dipping said pallet in said electrolyte, inclining said pallet in said electrolyte and moving said pallet from said bath to said ball transfer apparatus, and

a ball feeder provided over said bath and feeding said conductive balls onto said pallet.

29. The ball transfer system as set forth in claim 27, in which said ball arraying apparatus includes

a bath filled with said electrolyte and driven for rotation,

a pallet conveying unit dipping said pallet in said electrolyte and moving said pallet from said bath to said ball transfer apparatus, and

a ball feeder provided over said bath and feeding said conductive balls onto said pallet while said bath is being driven for rotation.

30. The ball transfer system as set forth in claim 27, in which said ball arraying apparatus includes

a pallet table retaining said pallet and changed between a horizontal position and an inclined position,

a pallet conveying unit moving said pallet onto said pallet table and from said pallet table to said ball transfer apparatus, and

a feeder supplying said conductive balls and said electrolyte onto said pallet on said pallet table in said inclined position.

31. A ball arraying apparatus comprising

a pallet formed with plural recesses laid on a pattern of an array of conductive pads on a target plate, open to a surface thereof and receiving conductive bumps, respectively,

a means for supplying electrolyte to said pallet so that said electrolyte flows over said surface, and

a means for supplying said conductive balls onto said surface so that said conductive balls are moved on said surface together with said electrolyte.

32. The ball arraying apparatus as set forth in claim 31, in which said pallet is further formed with a drain passage connected to said recesses for flowing

out said liquid after said conductive bumps are received in said plural recesses, respectively.

33. The ball arraying apparatus as set forth in claim 32, in which said drain passage has a hollow space and plural drain holes respectively associated with said plural recesses and connected between said hollow space and the associated recesses.

34. The ball arraying apparatus as set forth in claim 33, in which said plural drain holes are offset from said associated recesses, respectively.

35. The ball arraying apparatus as set forth in claim 31, in which said pallet is further formed with holes offset from said recesses so as to permit said electrolyte to flow out therethrough.

36. The ball arraying apparatus as set forth in claim 35, in which said pallet includes a first plate formed with said recesses and a second plate formed with said holes and fixed to said first plate.

37. The ball arraying apparatus as set forth in claim 36, in which said first plate is fixed to said second plate through a diffusion bonding.